

XXII.—*Contributions to the Ornithology of Egypt*\*,—  
 No. III. *The Birds of the Wadi Natron*. By M. J.  
 NICOLL, F.Z.S., M.B.O.U.

THE Wadi Natron consists of a chain of salt lakes situated to the north-west of Cairo and about twenty miles from the Nile Valley. The Egyptian Salt and Soda Company have a factory at Bir Hodmer, the "capital" of the Wadi.

In March 1910, by kind permission of the Company I paid a visit to the Wadi Natron, where I stayed for nine days collecting birds. My special reasons for going there were:—

(1) To obtain specimens of the Crested Lark (*Galerida cristata caroli*), which was, until lately, believed to be peculiar to the Wadi Natron.

(2) As only two collections of birds had previously been made in this locality, *i. e.*, by Mr. W. L. S. Loat and the Hon. N. Charles Rothschild in 1903, the former of whom published a paper on his observations ('Ibis,' 1905, p. 453), I thought it probable that further work there might be productive.

(3) That, owing to the position of the Wadi, observations on the migration of birds there might be of importance.

As regards the last point Mr. Loat states that the Wadi Natron is out of the track of migrating birds ('Ibis,' 1905, p. 454), but as he was there at least a month too early for the beginning of the spring migration it is hardly surprising that he met with but few species. Altogether he enumerates about forty-five. Mr. Rothschild unfortunately did not publish any account of the birds which he collected there, but I know that he obtained examples of several species which Mr. Loat did not meet with.

During my visit in March 1910 the spring migration

\* See 'Ibis,' 1909, pp. 285 and 623.

was just commencing, and subsequent researches have proved that the Wadi Natron is a veritable "Heligoland" as far as migration is concerned. During my first visit I fortunately obtained the valuable co-operation of Signor A. T. Balboni, the Secretary of the Wadi Natron Branch of the Salt and Soda Company—a keen zoologist and collector; and owing to his kind help, which I most gratefully acknowledge, I am now able to add about 120 species and subspecies of birds to Mr. Loat's list! In November 1911 I again visited the Wadi Natron, and spent six days there, during which time I walked from end to end of the Wadi and added several species to my former collection.

Apart from the Salt Lakes, which in themselves are only attractive to wading birds—Ducks and Flamingos—there are a number of fresh-water pools and springs, vast tracts of bulrushes, ("bourdy"), and a small experimental farm on which clover and various corn-crops are grown. A little plantation of eucalyptus trees make a further attraction for passing birds. Taken on the whole, however, the Wadi Natron does not look an attractive spot for migrants, and the following list of the birds which have been known to occur there is surprising, but there is no doubt that there is a great migration-route there from south to north in spring and *vice versa* in autumn.

My best thanks are due to Mr. Balboni for his most valuable help in obtaining and sending to me birds during the past two years. On many occasions consignments were sent to me by hand over the desert as far as Rhatalbe, on days when there was no train running on the light railway from the Wadi; and as Mr. Balboni is a good ornithologist and most careful collector all the birds sent by him were of the greatest interest to me, and without his help the present paper could never have been written.

To Mr. D. Patterson, the manager of the Wadi Natron factory, my best thanks are due for his many kindnesses to me during my two visits, and for allowing me not only to use the rest-house at Bir Hodmer, but for placing guides, trolleys, and horses at my disposal at all times.

Lastly, I would offer my best thanks to the Hon. Walter Rothschild and Dr. Ernst Hartert for their great kindness in permitting me to work out my collections at the Tring Museum. Only those who have had the good fortune to work at that magnificent institution will understand what a great help it has been to me in the preparation of the present paper.

Finally, I would mention that this paper is, I hope, but a first instalment of the avifauna of the Wadi Natron. It seems to me that the material already accumulated should be described without loss of time, seeing that it includes several new and many little-known facts relating to the birds of Egypt.

#### 1. *TURDUS MUSICUS* Linn.

*Turdus musicus* Linn. Syst. Nat. xii. p. 292 (1766) ; Shelley, Birds of Egypt, p. 66.

I have a Song-Thrush shot by Mr. Balboni on December 20th, 1910. During my visit in November 1911 I saw an example on two occasions.

Song-Thrushes from Egypt, where they are winter visitors, are nearer to British examples than to the typical Grey-backed continental form, but for the present I place them under the name given above.

#### 2. *TURDUS PILARIS* Linn.

*Turdus pilaris* Shelley, p. 66.

A Fieldfare was shot by Mr. Balboni on December 20th, 1910, and was forwarded to me with the Song-Thrush mentioned above. This species seems to be a scarce winter visitor to Egypt, and its occurrence in the Wadi Natron, where there is little to attract Thrushes, is remarkable.

#### *TURDUS MERULA SYRIACUS*.

During my visit in March Mr. Balboni saw a Blackbird in the garden near the factory.

[All the Blackbirds in my collection from Giza are referable to *T. m. syriacus*.]

## MONTICOLA SAXATILIS (Linn.).

*Monticola saxatilis* Shelley, p. 70.

This Rock-Thrush was first seen on March 21st, when I obtained a male; a day or two later several more appeared. The first arrivals were adult males. One adult male in perfect autumn plumage was obtained by Mr. Balboni on September 20th, 1910.

## MONTICOLA SOLITARIUS TRANSCASPICUS Hartert.

? *Monticola cyanus* (Linn.), Shelley, p. 70.

First seen on March 19th, after which date I met with and obtained several specimens, all adult males, during my stay.

All my specimens from the Wadi are referable to Hartert's *M. s. transcaspicus*, which is paler than the typical form.

## SAXICOLA ŒNANTHE ŒNANTHE (Linn.).

*Saxicola œnanthe* (Linn.), Shelley, p. 71.

The Wheatear was just arriving from the south when I reached the Wadi on March 18th. After a day or two numbers appeared and they were excessively numerous up to the time of my departure.

## SAXICOLA ŒNANTHE ARGENTEA Lönningberg.

*Saxicola œnanthe argentea* Lönningberg, Arkiv for Zoologi, v. No. 9, p. 22 (1909).

*Saxicola œnanthe leucorrhœa* Nicoll, Ibis, 1909, p. 287.

On March 21st, 1910, I shot an adult male which appears to be of this form.

It is probable that this form frequently occurs amongst the numbers of Wheatears which pass through the Wadi during the spring migration. I have not yet found *S. œ. rostrata* in that locality, but it probably occurs there, as I have three adult males from Giza.

The three forms of *Saxicola œnanthe* which occur in Egypt may be distinguished as follows:—

*S. œ. œnanthe*.—Adult male. Wing less than 100 mm.

*S. œ. argentea*.—Adult male. Wing 100 mm. or more;  
bill same size as in *S. œ. œnanthe*.

*S. œ. rostrata*.—Adult male. Wing about 100 mm.;  
bill long and slender, about 20 mm.

## SAXICOLA ISABELLINA Rüppell.

*Saxicola saltatrix* Ménetries, Shelley, p. 72; Loat, Ibis, p. 455 (1905).

I saw a few Isabelline Wheatears during my visit in March 1910, and again in November 1911.

## SAXICOLA HISPANICA XANTHOMELÆNA Hempr. &amp; Ehr.

*Saxicola xanthomelæna* Hemprich & Ehrenberg, Symb. Phys., Aves, Fol. C. aa. No. 6 (1833).

*Saxicola amphileuca* Hempr. & Ehrenb., Shelley, p. 72.

*Saxicola eurymelæna* Hempr. & Ehrenb., Shelley, p. 73.

Dr. Hartert has recently called attention to the fact that the Black-throated and Black-eared Chats are of one and the same species, of both of which there is a western and an eastern form, and I am thoroughly in agreement with him.

Hemprich and Ehrenberg's type belonged to the Black-throated variety.

I obtained examples of both varieties during my stay in the Wadi Natron. They arrived in great numbers two days after I reached the Wadi. The black-throated form slightly outnumbered the other. I have no autumn records at present of this Chat in the Wadi.

## SAXICOLA DESERTI HOMOCHROA (Tristr.).

*Cenanthe deserti homochroa* Rothschild & Hartert, Nov. Zool. xviii, p. 515.

*Saxicola deserti* Rüppell, Shelley, p. 74; Loat, Ibis, 1905, p. 455.

I believe this Chat to be resident in the Wadi Natron. Examples were obtained during my visit, and specimens received from Mr. Balboni during the summer of 1910 had evidently been breeding.

All my specimens belong to this form, which is quite separable from *S. d. amphileuca*, which occurs in "Nubia."

## PRATINCOLA RUBETRA (Linn.).

*Pratincola rubetra* Shelley, p. 81.

I received from Mr. Balboni a male Whinchat shot on April 28th, and another shot on May 15th, 1910, which I take to be a female. The latter was badly damaged by shot and

has a curious bleached appearance, which may be due to a somewhat long stay in the Wadi. It is interesting to note that the salt desert of the Wadi Natron appears to cause bleaching and abrasion very quickly. I have specimens of Crested Larks from there in which some of the feathers are bleached almost white, and some specimens of *Saxicola deserti* have the tips of their primaries worn completely off.

**PRATINCOLA TORQUATA RUBICOLA.**

*Pratincola rubicola* (Linn.), Shelley, p. 81; Loat, Ibis, 1905, p. 455.

During my visit in March 1910 a few Stonechats were seen. Mr. Balboni forwarded a pair shot on October 29th, 1910.

In November 1911 I found the Stonechat to be fairly numerous.

**PHÆNICURUS PHÆNICURUS (Linn.).**

*Ruticilla phænicura* Shelley, p. 82.

*Ruticilla phænicurus* Loat, Ibis, 1905, p. 455.

Mr. Loat appears to have met with the Common Redstart as early as January 21st. This is quite an exceptionally early date for this species in Egypt. The first I saw in the Wadi Natron was on March 20th, when a single adult male was shot. A few days later several others were met with, evidently new arrivals and all adult males. Mr. Balboni sent me two shot on April 13th, 1910.

**PHÆNICURUS OCHRURUS GIBRALTARIENSIS.**

*Motacilla gibraltarensis* Gmelin, Syst. Nat. i. 2, p. 987 (1789).

*Phœnicurus ochrurus gibraltariensis* Hartert, Vög. d. pal. Fauna, vol. i. p. 720.

*Ruticilla titys* (Scop.), Shelley, p. 83.

A single female or immature male was observed on March 18th, and I subsequently saw the same bird or another on several occasions during my stay. In November 1911 I found Black Redstarts in some numbers and obtained a young bird. One adult was seen but not procured.

Mr. Loat did not meet with the Black Redstart.

## LUSCINIA SUECICA SUECICA.

*Cyanecula suecica* Shelley, p. 85; Loat, Ibis, 1905, p. 455.

The Red-spotted Blue-throat was not actually obtained in the Wadi during my visit, nor have I yet examined a specimen from there, although I am certain that I correctly identified several examples amongst the numbers of Blue-throats which frequented the fresh-water springs near the Salt Lakes. During my stay I shot but two Blue-throats, one which I took to be of this race and one of the white-spotted form. I now find that the former belongs to the subspecies next to be mentioned, i. e. *L. s. volgæ*.

In November 1911 all the Blue-throats met with were immature examples, and therefore impossible to assign to any race.

## LUSCINIA SUECICA VOLGÆ (Kleinschm.).

*Erithacus volgæ* Kleinschmidt, Falco, iii. No. 2, p. 47 (1907).

*Luscinia suecica volgæ* (Kleinschm.), Hartert, Vög. d. pal. F. vol. i. p. 749.

I shot an adult male on March 22nd, 1910, which from the bleached condition of its primaries—the outer webs of which are nearly white—had evidently wintered, or at least spent some time in the Wadi.

The subspecies differs from the Red-spotted Blue-throat by having a considerable amount of white on the breast-spot; in some the spot is *almost* entirely white.

## LUSCINIA SUECICA CYANECULA (Wolf).

On March 20th, 1910, I shot an adult male White-spotted Blue-throat near one of the fresh-water pools.

## LUSCINIA MEGARHYNCHOS MEGARHYNCHOS Brehm.

*Luscinia megarhynchos megarhynchos* Hartert, Vög. d. pal. F. vol. i. p. 733.

*Philomela luscinia* Shelley, p. 88.

The Nightingale was first seen by me on March 21st, 1910, and on every subsequent day during my visit. On

April 28th, 1910, Mr. Balboni shot a female which he forwarded to me.

All the examples we met with were perfectly silent.

*SYLVIA COMMUNIS COMMUNIS* Lath.

*Sylvia communis communis* Lath., Hartert, V. d. pal. F. vol. i. p. 586.

*Sylvia cinerea* Bechst., Shelley, p. 111.

On March 21st, 1910, I shot a female Whitethroat in some scrub in the desert close to the Wadi Natron.

*SYLVIA CURRUCA CURRUCA* (Linn.).

*Sylvia curruca* Shelley, p. 110.

The Lesser Whitethroat was frequently met with during my visit in March 1910.

*SYLVIA CANTILLANS ALBISTRIATA* (Brehm).

*Curruca albistriata* Brehm, Vogelfang, p. 229 (1855—Ägypten).

This form of the Subalpine Warbler was first described by Brehm in 1855 from an Egyptian specimen. I have compared the type with specimens collected by me in Lower Egypt and find it to be a perfectly good form\*. During my visit in March 1910 this handsome little Warbler was very common wherever there was any cover. I obtained two pairs. The fully adult female has the throat and upper breast tinged with vinous; younger females have these parts buffy white.

Although it is a common visitor to Egypt during the spring migration, I know of no instance of its nesting there.

*SYLVIA RUEPPELLI* Temm.

*Sylvia rueppellii* Temm., Shelley, p. 106.

*Sylvia ruppeli* Temm., Hartert, vol. i. p. 592.

First seen on March 21st, 1910, while a few were seen later and a female obtained during my visit. I have an adult male collected by Mr. Balboni, April 28th, 1910.

\* All Egyptian specimens which I have so far examined belong to this form.



## PHYLLOSCOPUS COLLYBITA COLLYBITA (Vieill.).

*Phyllopneuste rufa* (Gm.), Shelley, p. 101.

*Phylloscopus rufus* (Gm.), Loat, Ibis, 1905, p. 456.

The Western or typical Chiffchaff was abundant during my visit in March. Amongst the numbers seen I believe that I also saw the Eastern *P. c. abietina*, but as no specimens were obtained I cannot say for certain.

I might here mention that amongst the vast numbers of Chiffchaffs which frequent Egypt during the winter months there are many which have a most peculiar call-note—a shrill chirp—totally unlike the call-note of the typical form. I now have a number of specimens of these birds, which differ from the typical *P. collybita* in being less greenish above and usually much whiter below, and although they are of small size I believe them to be referable to the Eastern *P. c. abietina*.

In his most valuable work—to which frequent reference is made in this paper, and to which I am greatly indebted—Dr. Hartert gives the measurements of the Eastern form as larger than those of the typical Chiffchaff. It must be borne in mind, however, that Chiffchaffs differ very considerably in size individually.

## [PHYLLOSCOPUS BONELLII (Vieill.).

*Phyllopneuste bonelli* Shelley, p. 101.

I obtained no specimens of Bonelli's Warbler in the Wadi Natron although one or two examples were seen, therefore I cannot say which subspecies occurs there. *P. b. orientalis* (Brehm) is the common form occurring in Egypt, though I have one specimen of the typical form obtained by Mr. J. L. Bonhote in the Giza Province. I hope to get specimens of this Warbler from the Wadi Natron later.]

## PHYLLOSCOPUS SIBILATRIX SIBILATRIX.

*Phylloscopus sibilatrix* (Bechst.), Shelley, p. 101.

On April 28th, 1910, Mr. Balboni shot a female Wood-Wren, which he kindly forwarded to me. This example is one of the very few specimens I know of this, the typical form from Egypt. *P. s. erlangeri* Hart., is the commoner

subspecies here, and is easily separable from the typical form by its more brilliant coloration.

*AËDON GALACTODES GALACTODES* (Temm.).

*Aëdon galactodes* (Temm.), Shelley, p. 85.

The Rufous Warbler is not uncommon in the Wadi Natron during the summer. I was too early for this species during my visit, but Mr. Balboni has sent me specimens and eggs.

*ACROCEPHALUS STREPERUS STREPERUS* (Vieill.).

*Calamoherpe arundinacea* Shelley, p. 94.

I first met with the Reed-Warbler on March 19th, 1910, in some bulrushes near one of the Salt Lakes, when I obtained two males, while during the next few days I saw many others.

Compared with British examples, specimens from Egypt seem to be much less rufous in coloration, though they are not nearly grey enough for *A. s. macronyx*. At present I must unite them with the typical form, but I think that subsequent researches may shew that there is at least another geographical race of this species.

*ACROCEPHALUS STENTOREUS STENTOREUS* (Hempr. & Ehrenb.).

*Acrocephalus stentoreus* (H. & E.), Shelley, p. 95; Loat, Ibis, 1905, p. 456.

The Egyptian and Palestine form of the Clamorous Great Reed-Warbler appears to be resident in the Wadi Natron. I saw several during my visit in March.

Loat obtained it in February, and Mr. Balboni has sent me a nearly full-grown young bird obtained on June 8th, 1910.

In November 1911 I found many examples of this species.

*ACROCEPHALUS SCHÆNOBÆNUS* (Linn.).

*Calamodyta schænobænus* Shelley, p. 91; Loat, Ibis, 1905, p. 456.

First met with on March 19th, after which date it became fairly abundant in the bulrushes round the Salt Lakes up to the time of my departure.

## LOCUSTELLA LUSCINIOIDES LUSCINIOIDES (Savi).

*Pseudoluscinia luscinoides* (Savi), Shelley, p. 89; Loat, Ibis, 1905, p. 455.

On March 20th, 1910, I found several Savi's Warblers amongst some dried bulrushes close to a fresh-water spring, and on every subsequent day during my stay I met with this bird in similar situations.

Savi's Warbler is one of the most skulking birds I know and I found it exceedingly difficult to shoot. I obtained most of my specimens by walking through the bulrushes and shooting the birds as they rose almost at my feet.

On March 23rd I shot a single specimen amongst some dried reeds on the edge of a Salt Lake. Undoubtedly it was a fresh arrival—mere skin and bone—whereas the others obtained were very fat. When on the ground Savi's Warbler did not "hop" but "waddled" along like a parrot!

It is interesting to note that on the same day, *i. e.* March 23rd, when I shot the very thin example of Savi's Warbler, a strong gale had been blowing for thirty-six hours; and on the 23rd, Yellow Wagtails—which had increased in numbers—were very thin and half-starved. Swallows (*Hirundo rustica*) were so hungry that they fluttered close round my feet as I walked, trying to catch the insects disturbed by my passage. So fearless were these birds and so close did they come that I had to keep stopping in order to avoid kicking them.

On these two days most of the insectivorous birds were taking shelter in the cultivated land, where also house-flies had retired in vast numbers, and amongst the small Eucalyptus trees I found both birds and flies swarming. The latter made collecting almost impossible, as they settled on my face in clouds. The Swallows and Wagtails had evidently not discovered this abundant source of food supply, as all of them were searching for food on the open desert, which had been swept clear of insects by the gale.

*PRINIA GRACILIS GRACILIS* (Licht.).

*Drymæca gracilis* Shelley, p. 98; Loat, Ibis, 1905, p. 456.

*Prinia gracilis gracilis* (Licht.), Hartert, Vög. d. pal. F. vol. i. p. 608.

This pale subspecies of the "Graceful Wren-Warbler" is resident in the Wadi Natron, and I have a number of its skins as well as eggs.

It may not be out of place to offer here a few remarks on the geographical distribution of the two forms of *Prinia* which occur in Egypt.

The typical form, *P. g. gracilis*, was first described from Nubia (Lichtenstein, Verz. Doubl., Berlin, p. 34 (1823)).

Shelley, in his 'Birds of Egypt,' called attention to the difference between examples of "*Drymæca*" from Lower and Upper Egypt; subsequently Dr. Reichenow described the form inhabiting the Nile Delta as *P. g. deltae* (J. f. O. 1904, p. 307). Lastly, in his book on Palearctic Birds, Dr. Hartert mentions that the typical form occurs in the Wadi Natron, which he wrongly states to be south of Cairo. Mr. Loat also mentions that his specimens from the Wadi Natron belong to the pale form. I am now able to say from my own observations that the distribution of the two forms is as follows:—*P. g. deltae* ranges from the north of the Nile Delta, Damietta, and Mariotis on the west, to Suez on the east; while *P. g. gracilis* is found as far north as the Wadi Natron and Fayoum, both of which places are oases in the Western desert (the former being *north* of Cairo); but never, so far as I am aware, is it to be met with in the Nile Valley, north of Luxor, the dark alluvial soil apparently being inhabited by the dark *Prinia g. deltae* only.

*MOTACILLA ALBA ALBA* Linn.

*Motacilla alba* Shelley, p. 126; Loat, Ibis, 1905, p. 457.

The White Wagtail was abundant during my visit in March, and is doubtless a winter visitant there as elsewhere in Egypt. It was very abundant in November 1911.

MOTACILLA FLAVA FLAVA Linn.

*Motacilla flava* Shelley, p. 128.

? *Budytes flava* (Linn.), Loat, Ibis, 1905, p. 457.

My visit in March coincided with the northern migration of "Yellow" Wagtails, and amongst the mixed flocks containing examples of four different subspecies I saw several individuals of the typical form, one of which, an adult male, was obtained.

I have little doubt that the bird which Mr. Loat assigns to this race was not the typical *M. f. flava*, but the resident Nile-Valley form, *M. f. pygmæa*. I have not seen the examples which he obtained, but his careful description and measurements of his specimens leave no room for doubt to which form they should be assigned. Moreover, February 10th is far too early for any migratory movement of Yellow Wagtails in Lower Egypt.

In November 1911 I saw a few immature examples of this form in the cultivated portion of the Wadi.

MOTACILLA FLAVA DOMBROWSKYII (Tschusi).

*Budytes flavus dombrowskyii* Tschusi zu Schmidhoffen, Orn. Jahrb. xiv. p. 161 (1903, Roumania).

*Motacilla flava dombrowskii* (Tschusi), Hartert, Vög. d. pal. Fauna, vol. i. p. 289.

Although this form has not been previously recorded from Egypt, it has for some time been known to me as a spring visitor on migration. In March 1909 Mr. J. L. Bonhote and I obtained specimens in the Fayoum.

On March 21st and 23rd I shot two adult males in the Wadi Natron from amongst mixed flocks of *M. f. flava* and *M. f. melanocephala*. This form differs from *M. f. flava* in having a dark slate-blue crown and almost black ear-coverts; the superciliary stripe being, as in the typical form, pure white.

MOTACILLA FLAVA PYGMÆA (Brehm).

*Budytes pygmaeus* A. E. Brehm, J. f. O. 1851, p. 74.

During my visit in November 1911 I saw an adult male of this Wagtail at close quarters, but was unable to obtain

it owing to its being in the midst of an impenetrable swamp.

That this form should occur in the Wadi Natron is not surprising as it is common in the Delta and in the Fayoum. I have obtained a specimen at Luxor. It is easily recognisable at a distance by its small size and dark coloration.

*MOTACILLA FLAVA MELANOGRISEA* (Hom.).

*Budytes melanogriseus* Homeyer, J. f. O. 1878, p. 128.

*Motacilla flava melanogriseus* (Hom.), Hartert, V. d. pal. F. vol. i. p. 296.

On March 24th, 1910, I shot a single adult male of this form in the Wadi.

*M. f. melanogrisea* is most nearly allied to *M. f. melanocephala*, from which it differs in the following particulars:—Crown dull black; nape greyish black; chin and upper throat whitish; a white line from the gape along the sides of the head below the ear-coverts. The under parts are pale sulphur-yellow. Measurements smaller than those of *M. f. melanocephala*.

*MOTACILLA FLAVA MELANOCEPHALA* Licht.

*Motacilla melanocephala* Licht., Shelley, p. 130.

The Black-headed Wagtail was the most numerous of the Yellow Wagtails during my visit. They passed in streams daily, all going northwards, and some specimens were obtained. Of all the "Yellow" Wagtails the present form is perhaps the most well marked; it is easily recognisable at some distance. The call-notes of this and all allied forms are similar.

*ANTHUS PRATENSIS* (Linn.).

*Anthus pratensis* Shelley, p. 131.

During my visit in March a few Meadow-Pipits were seen daily. In November 1911 this species was not uncommon.

*ANTHUS CERVINUS* (Pall.).

*Anthus cervinus* Shelley, p. 131; Loat, Ibis, 1905, p. 457.

Red-throated Pipits were fairly abundant during my stay

in the Wadi. They were all in full moult in March. In November 1911 I found this species in swarms in the cultivated parts and in the fresh-water swamps.

ANTHUS TRIVIALIS TRIVIALIS (Linn.).

*Anthus trivialis* Shelley, p. 130.

Numbers of Tree-Pipits were seen in March consorting with Cretzschmar's and Ortolan Buntings in a small patch of clover, and specimens were obtained. On April 13th, 1910, Mr. Balboni obtained an example.

The fact of the species being found in company with Ortolans is most noteworthy, as Gätke has laid special stress on the occurrence of these two birds in Heligoland at the same time.

ANTHUS CAMPESTRIS (Linn.).

*Anthus campestris* Shelley, p. 134.

Mr. Loat did not meet with the Tawny Pipit during his stay in the Wadi Natron.

I found it exceedingly abundant in March, and from the behaviour of some of the birds seen I believe that it may possibly nest there sometimes.

ANTHUS SPINOLETTA COUTELLII.

*Anthus spinolettus* Shelley, p. 132.

This form of the Water-Pipit was not met with by Mr. Loat during his visit. I found it fairly abundant in March, by which time the summer plumage was being assumed.

In November I obtained several specimens.

ORIOLOUS ORIOLOUS (Linn.).

*Oriolus galbula* (Linn.), Shelley, p. 156.

The occurrence of the Golden Oriole in the Wadi Natron is remarkable, as there is little or nothing for it to feed on there; yet I have received no less than six examples collected by Mr. Balboni.

A female (? adult) shot May 5th, 1910, has a jet-black feather in the centre of the breast.

All these examples were very thin.

LANIUS SENATOR SENATOR Linn.

? *Lanius auriculatus* Shelley, p. 117.

*Lanius senator senator* Linn., Hartert, V. d. pal. F. vol. i. p. 434.

I have a single male of the typical Woodchat Shrike from the Wadi Natron, shot by myself on March 19th, 1910. In this specimen the central pair of rectrices are *dark brown to their roots*.

LANIUS SENATOR NILOTICUS (Bp.).

*Lanius senator niloticus* (Bp.), Hartert, Vög. d. pal. F. vol. i. p. 436.

*Lanius pomeranus niloticus* (Bp.), Nicoll, Ibis, 1909, p. 472.

During my visit in March 1910 Woodchats were quite numerous, and I obtained five examples of this geographical race.

This Eastern form differs from typical *L. s. senator* in having the bases of the central pair of tail-feathers *white*. The amount of white is somewhat variable. One example has 3 em. from the base of the tail white. In others there is less; but as the typical form has the central pair of rectrices *darker to their bases*, I refer all examples shewing the least traces of white on this part to the Eastern form.

I do not vouch for the validity of this form as a *good* subspecies, as I have not personally examined breeding examples of *L. s. niloticus*; but all the European breeding birds which I have seen have the central tail-feathers dark to the very base. In Egypt, as stated above, one meets with examples with a little white only on these parts; but as both extremes occur on migration it is quite natural to expect intermediates. Such individuals in no way disprove the validity of the two subspecies, and therefore, as previously stated, I consider that all examples shewing any amount of white on the bases of the central pair of rectrices should be assigned to the Eastern form for the present, at all events.



## LANIUS COLLURIO Linn.

*Lanius collurio* Shelley, p. 117.

On August 15th, 1910, Mr. Balboni obtained an adult male Red-backed Shrike, and three days later an adult female; both of these birds were just beginning to moult.

Up to the present time I have no records of the occurrence of the Red-backed Shrike in Egypt in spring, although it is a regular visitor, in large numbers, during the autumn migration.

## MUSCICAPA GRISOLA.

*Muscicapa grisola* Shelley, p. 118.

Three Spotted Flycatchers were collected by Mr. Balboni, one on April 28th, one on May 5th, and one on May 7th, 1910.

## MUSCICAPA ATRICAPILLA SEMITORQUATA Homeyer.

*Muscicapa collaris* Nicoll, Bull. B. O. C. xxiii. p. 93.

*Muscicapa semitorquata* Nicoll, Bull. B. O. C. xxv. p. 28; id. Ibis, 1909, pp. 473, 714.

An adult male of the Half-collared Flycatcher was obtained by Mr. Balboni on April 13th, 1910, and forwarded to me.

The occurrence of this subspecies in the Wadi Natron is of exceptional interest, as during April 1910 this race was frequently observed at Giza, where the first Egyptian example recorded was obtained in April, 1909. It is highly probable that owing to its confusion with the Pied Flycatcher (*M. a. atricapilla*) this interesting form may have been previously overlooked in Egypt. It only differs from the Pied Flycatcher in having the sides of the neck white, whereas in the typical form the sides of the neck are black.

The Half-collared Flycatcher is a subspecies of *M. a. atricapilla*, and has the outer webs of the three outer pairs of rectrices white, whereas in *M. collaris* the white is restricted to the outer pair *only* and is sometimes even entirely absent.

HIRUNDO RUSTICA RUSTICA Linn.

*Hirundo rustica* Shelley, p. 120; Loat, Ibis, 1905, p. 457.

The Swallow is probably a regular visitor during migration.

I have a male shot by Mr. Balboni on March 23rd, 1910, while another was shot on May 11th, but was too much damaged for preservation.

Up to the present time I have no specimens of *H. r. savignii* from the Wadi Natron.

CHELIDON URBICA URBICA (Linn.).

*Chelidon urbica* Shelley, p. 125.

CHELIDON URBICA MERIDIONALIS Hartert. Vög. d. pal. F. vol. i. p. 809.

I have a pair of House-Martins from the Wadi Natron. One female was shot by myself on March 25th, 1910, and one male was obtained by Mr. Balboni, April 13th, 1910.

Both these examples, as well as another pair which I have from the Giza Province, appear from their wing measurements to be nearest to this form.

RIPARIA RIPARIA (Linn.).

The European Sand-Martin passes through the Wadi Natron during the spring migration in large numbers. I have no autumn records of this bird.

During my visit in March 1909 I believe I saw examples of Shelley's Sand-Martin, *Riparia r. littoralis*, which is the breeding Sand-Martin of Egypt; but as no examples have been obtained I hesitate to include it under a separate heading.

PASSER HISPANIOLENSIS HISPANIOLENSIS (Temm.).

*Passer salicicola* Shelley, p. 149.

*Passer hispaniolensis hispaniolensis* (Temm.), Hartert Vög. d. pal. F. vol. i. p. 156.

During my visit in March I saw a pair of Spanish Sparrows and subsequently Mr. Balboni sent me several specimens, a pair obtained on April 19th, 1910, being in breeding plumage.

I have at present no positive records of the breeding of this species in Egypt, though examples obtained in April, in the Delta, have the appearance of being about to nest.

In November 1911 Spanish Sparrows were abundant in the Wadi and several examples were obtained. They frequented the cultivated land and were in company with Linnets.

So far as I can at present ascertain no form of *Passer domesticus* occurs in the Wadi Natron.

FRINGILLA CÆLEBS Linn.

*Fringilla cælebs* Linn., Shelley, p. 151.

During my stay in November 1911 I saw several Chaffinches, one of which was obtained. All those seen were females.

SERINUS CANARIUS SERINUS.

*Serinus hortulanus* Shelley, p. 154.

*Serinus canarius serinus* Hartert, Vög. d. pal. Fauna, vol. i. p. 83.

On November 9th, 1911, Mr. Balboni shot a female Serin in his garden, and during the same month I saw several examples, but no more specimens were obtained.

LINOTA CANNABINA MEDITERRANEA.

*Linota cannabina* Shelley, p. 154.

In March 1910 I saw a Linnet, but no specimen was obtained during my stay in November 1911. Linnets were abundant in the cultivated ground and several examples were procured, all of which are referable to this form, as are all others which I have so far examined from Egypt.

Mr. Balboni tells me that he has once seen a Greenfinch and once a Goldfinch in the Wadi, but so far has been unable to obtain specimens.

EMBERIZA CALANDRA CALANDRA Linn.

*Emberiza miliaria* (auctorum) Shelley, p. 144.

On March 15th, 1910, I saw a Corn Bunting in the Wadi Natron but was unable to obtain it. In November 1911 this Bunting was remarkably numerous and a number

of specimens were obtained. They were apparently new arrivals, as all those shot were in poor condition. On one occasion I caught one of these Buntings alive by driving it into a native house.

Egyptian examples of Corn Buntings are much paler and greyer than British specimens.

EMBERIZA CÆSIA Cretzschmar.

*Emberiza cæsia* Shelley, p. 146.

This Bunting was exceedingly common during my visit in March 1910. All those met with were consorting with Ortolans and Tree-Pipits in a small patch of cultivation—wheat and clover: so closely were they congregated that on several occasions I obtained two or three examples at a shot. The call-note of Cretzschmar's Bunting is a very soft chirp, and owing to its unobtrusive habits it is quite easy to pass over a large flock when among standing corn or clover.

EMBERIZA HORTULANA Linn.

*Emberiza hortulana* Shelley, p. 145.

Ortolans were not uncommon during my stay in March, and were always found feeding together with Cretzschmar's Buntings and Tree-Pipits in the clover and wheat patches.

PYRRHULAUDA MELANAUCHEN (Cab.).

For this interesting addition to the Avifauna of Egypt I am indebted to Mr. Balboni, who forwarded to me, in the flesh, a perfect male example, which he had shot in the cultivated land on September 10th, 1911. The occurrence of a Finch-Lark in the Wadi Natron is surprising, but the specimen shews absolutely no signs of having been in captivity, and from the entire absence of fat on the body I conclude that it had just arrived in the Wadi after a long journey.

In addition I have had several other equally surprising visitors from this locality, *i. e.*, the Fieldfare and Golden Oriole referred to above, and the Oyster-catcher, which I shall mention later.

*GALERIDA CRISTATA CAROLI* Hartert.

*Galerida cristata* Loat, Ibis, 1905, p. 457.

*Galerida cristata caroli* Hartert, Vög. d. pal. Fauna, vol. i. p. 234.

This—the most sandy-coloured Crested Lark yet known from Egypt—was first described by Hartert from specimens collected by the Hon. N. C. Rothschild in the Wadi Natron.

Loat called attention to the pale coloration of the examples he obtained in the Wadi.

During my visit in March 1910 a series of eleven examples were obtained, and I have little doubt that they were just about to nest. At that time all those met with were inhabiting the salt-encrusted desert near the edges of the lakes and were very shy and difficult of approach. In November 1911, when I obtained more specimens, they were found for the most part either near the factory or close to the native houses, and were much more easily approached than in spring.

*Galerida c. caroli* is not confined to the Wadi Natron but inhabits the shores of the lakes in the Northern Delta, extending westward at least as far as Dabaa, whence I have recently received specimens collected by T. W. Russell Bey, of the Alexandria Police. Dabaa is 160 miles west of Alexandria, and how much farther this form extends in that direction it is impossible to say at present.

Freshly moulted examples of this Lark are greyer above and more rufescent beneath than they become later, and birds shot in early summer have a decidedly bleached appearance, some of the feathers being nearly white. This bleaching is caused, no doubt, by the salt ground which they frequent, and which acts in a most marked manner on some of the other Passerine birds which are resident, or which make a prolonged stay, in the Wadi.

*LULLULA ARBOREA* (Linn.).

*Alauda arborea* Linn., Shelley, p. 139.

On November 24th, 1911, Mr. Balboni and I each obtained a specimen of the Woodlark from a piece of ploughed ground near the factory. No others were seen.

## ALAUDA ARVENSIS CINEREA.

*Alauda arvensis* Shelley, p. 139.

This Grey Skylark was not uncommon during my visit in November 1911, and was found together with the following form in large mixed flocks. I saw no Skylarks in March 1910, and Mr. Balboni tells me that he had not met with this Lark before.

## ALAUDA ARVENSIS CANTARELLA Bp.

*Alauda arvensis* Shelley, p. 139.

Common in November 1911, and several specimens were obtained.

## CALANDRELLA BRACHYDACTYLA BRACHYDACTYLA.

*Calandrella brachydactyla* (Leisler), Shelley, p. 141.

Two forms of Short-toed Lark occur in the Wadi Natron : the typical sandy-coloured rufous-headed bird, and the greyer form which lacks the rufous crown and has richer marking in the upper parts ; the latter I refer to the form next to be mentioned.

During my first visit Short-toed Larks were extremely abundant in the small patches of cultivated land. Most of these appeared to belong to the darker form *C. b. longipennis*.

On May 28th, 1910, Mr. Balboni shot and forwarded to me a fine adult female with a very rufous crown to the head, in fact a typical *C. b. brachydactyla*. On dissection I found a large incubation patch, so it is evident that the bird had been nesting. This is the only instance that has come under my personal notice of the Short-toed Lark nesting in Egypt, but the bird may be a regular breeding species in this country.

## CALANDRELLA BRACHYDACTYLA LONGIPENNIS (Eversmann).

*Calandrella brachydactyla longipennis* (Eversm.), Hartert, Vög. d. pal. F. vol. i. p. 216.

In March 1910 Short-toed Larks were seen daily in immense flocks on the cultivated ground. Owing to the little time at my disposal and the amount of other birds which at the time were of more pressing interest, I did not

pay as much attention to these Larks as I might otherwise have done. I obtained a single specimen which is referable to this form. During my stay in November 1911 I only met with two Short-toed Larks, both of which were obtained and were found to belong to this dark grey form.

*OTOCORYS ALPESTRIS BILOPHA* (Temm.).

*Eremophila alpestris bilopha* (Temm.), Hartert, Vög. d. pal. F. vol. i. p. 257.

This Horned Lark was not included by Shelley in his 'Birds of Egypt.' Apparently the Hon. N. Charles Rothschild was the first to collect specimens in Egypt, in the Wadi Natron, where the bird is not uncommon and is resident. During my stay in March I did not meet with the Horned Lark, although it was one of the birds I was especially on the look out for. Soon after my return, however, Mr. Balboni sent me several examples, one of which, a female slightly shot in the wing, is now living in company with others since purchased alive from a Wadi Natron Bedouin.

I have examined several immature birds of this species, and in their first plumage they strikingly resemble a small Desert Lark (*Ammomanes*), but can always be distinguished by the amount of black in the tail. Full plumage is obtained in a single moult, as I have found by keeping young birds in captivity. I have on two occasions met with this little Lark in the Giza Province, and on each occasion I found it wild and difficult of approach.

During the winter the Horned Larks apparently gather together in flocks, as Mr. G. E. Burnett Stuart tells me that on December 2nd & 3rd, 1908, he observed about six flocks in the desert near the Wadi Natron.

In November 1911 I saw a single specimen near Gaar at the extreme northern end of the Wadi.

*AMMOMANES PHÆNICURA ARENICOLOR* (Sundev.).

*Ammomanes arenicolor* (Sundev.), Shelley, p. 137.

*Ammomanes phænicura arenicolor* (Sundev.), Hartert, Vög. d. pal. F. vol. i. p. 224.

This small Desert Lark is resident and breeds in the

deserts round the Wadi Natron. I did not meet with it during my visits, but Mr. Balboni has sent me both adult and immature examples.

ALÆMON ALAUDIPES ALAUDIPES (Desf.).

*Certhilauda desertorum* Shelley, p. 135; Loat, Ibis, 1905, p. 457.

The Bifasciated Lark is extremely numerous and resident in the deserts immediately surrounding the Wadi Natron. I have a fine series of birds of all ages collected by Mr. Balboni and myself, as well as eggs. For some years I was somewhat puzzled by the differences in coloration of examples of this species. They appeared to be divisible into two groups: one a sandy-backed bird with small spots on the breast, and the other a grey-backed bird with large blotches almost coalescing on the breast. After examining a large series of freshly-killed examples, I now have no hesitation in saying that the sandy-coloured birds are not really adults, and that the adult plumage is not assumed until after the bird is a year old, when the upper parts become greyish and the breast is thickly blotched with black.

STURNUS VULGARIS VULGARIS.

*Sturnus vulgaris* Linn., Shelley, p. 157.

During my visit in November 1911 a few Starlings were seen daily, and on the 26th Mr. Balboni shot one at Gaar—the most northern lake on the Wadi. It is referable to the typical form.

CORVUS CORAX UMBRINUS.

*Corvus umbrinus* Shelley, p. 158.

Ravens are sometimes to be seen in the Wadi Natron, but up to this time I have no material from that locality and so, for the present, use the name given above for the Egyptian Raven. Skins and living birds which I have from time to time examined from Egypt and the Soudan, vary individually in the size of the bill, and I believe that there are at least two forms of the brown-necked Raven in the above-mentioned localities.



## CORVUS CORNIX Linn.

*Corvus cornix* Shelley, p. 159.

*Corvus cornix sharpei* Hartert, Vög. d. p. F. vol. i, p. 10.

Mr. Balboni tells me that in March 1911 he met with a small flock of Hooded Crows in the Wadi Natron and many occurred in the autumn of 1911. I cannot separate Egyptian "Hoodies" from British specimens, much as I should like to do so. In habits they are absolutely different, but in size and coloration they seem to be the same.

## CAPRIMULGUS EUROPÆUS.

*Caprimulgus europæus* Shelley, p. 174.

On May 8th, 1910, Mr. Balboni shot and forwarded to me an adult female Nightjar belonging to this species. The body was coated with fat, thereby shewing that the bird was about to continue its northward migration.

## CAPRIMULGUS ÆGYPTIUS ÆGYPTIUS Licht.

*Caprimulgus ægyptius* Shelley, p. 175.

On March 18th, 1910, I shot two adult females of the dark form of this Nightjar. These are the only two specimens I have of this form from the Wadi Natron, and it seems certain that *C. æ. ægyptius* is only a visitor to Lower Egypt on migration.

## CAPRIMULGUS ÆGYPTIUS SAHARÆ.

On March 25th, 1910, I shot two males of this well-marked pale form of Nightjar.

I have since received three examples shot by Mr. Balboni in the Wadi: a male May 8th, 1910, a female June 8th, 1910, and a male June 13th, 1910. These were undoubtedly breeding birds, and are of a very sandy coloration.

## LYNX TORQUILLA TORQUILLA.

*Lynx torquilla* Shelley, p. 161.

On March 24th, 1910, I shot a male Wryneck in the Wadi. It was sitting out in the desert about half a mile from the nearest lake, and appeared to have just arrived.

## ALCEDO ISPIDA PALLIDA.

I have two males of this subspecies of Kingfisher collected by Mr. Balboni on August 18th and 29th, 1910, respectively. These are the only records I have of this bird in the Wadi, where—as there are no fishes—there is nothing to attract them.

All the specimens of *Alcedo ispida* which I have examined from Egypt are referable to this form, which is smaller, with shorter wings, and a longer and more slender bill than *Alcedo i. ispida*.

## CORACIAS GARRULUS.

*Coracias garrulus* Shelley, p. 168.

On August 20th, 1910, Mr. Balboni obtained an adult male Roller which had just started to moult. Nine days later he obtained an immature specimen. Both of these are now in my collection.

## MEROPS APIASTER.

*Merops apiaster* Shelley, p. 169.

I have three examples of this Bee-eater which were shot by Mr. Balboni during May 1910.

## MEROPS PERSICUS PERSICUS.

*Merops aegyptius* Shelley, p. 170.

The Blue-checked Bee-eater visits the Wadi Natron earlier than the "common" species. I have specimens obtained as early as April 1st, 1910.

I do not know whether this bird breeds in the Wadi Natron.

## MEROPS LAMARKI CLEOPATRA (Nicoll).

Mr. Balboni saw a single example of a little Green Bee-eater in the Wadi in the autumn of 1910. Unfortunately, he was unable to secure it, but there is little doubt that it belonged to this, the Northern form.

Hartert has pointed out that "*lamarki*" is the correct specific name of the small Green Bee-eaters and takes precedence of "*viridis*."

## UPUPA EPOPS EPOPS.

*Upupa epops* Shelley, p. 155.

The European or Migrating Hoopoe passes through the Wadi during March, but I have at present no records of this form during the autumn migration. While in the Wadi in March I frequently saw small flocks of ten or a dozen examples passing north, and a few solitary individuals were always to be seen near the houses probing in the sand for food. I have no record of Hoopoes nesting in the Wadi Natron, and I did not meet with Brehm's Hoopoe (*U. epops major*) there, though I found the latter at Khatalb, at the head of the light railway about twenty miles east of the Wadi and in the Nile Valley, in November 1911.

## CUCULUS CANORUS CANORUS Linn.

*Cuculus canorus* Shelley, p. 162.

I have an immature Cuckoo shot by Mr. Balboni on September 20th, 1910, and one assuming adult plumage shot on September 25th, 1911. I did not meet with this species during my visit in March.

## ASIO ACCIPITRINUS.

*Asio accipitrinus* Shelley, p. 179.

I shot two Short-eared Owls during my visit in March. In both cases these birds were flushed from a large patch of dried bulrushes.

## ASIO OTUS (Linn.).

*Asio otus* Shelley, p. 178.

On November 25th, 1911, I shot a female Long-eared Owl. It was taking shelter during the daytime in a row of small eucalyptus trees.

## SCOPS GIU.

*Scops giu* Shelley, p. 178.

Mr. Balboni has sent me two Scops Owls, one shot on April 26th, 1910, and one on April 16th, 1911. The bird is doubtless a visitor only during migration.

Mr. Loat saw a small Owl in the Wadi which he thought might have been a Scops Owl.

## ATHENE NOCTUA GLAUX.

*Carine meridionalis* Shelley, p. 177.

I have at present no specimens of the Little Owl from the Wadi Natron, but during my stay in November 1911 I saw several examples towards dusk, amongst rocks in the desert. None were seen in March 1910.

## [BUBO ASCALAPHUS.

*Bubo ascalaphus* Shelley, p. 180.

I have no specimens of this Owl from the Wadi Natron, but Mr. Balboni tells me that he has met with it there.]

## CIRCUS CYANUS (Linn.).

*Circus cyanus* Shelley, p. 182.

On my arrival in the Wadi on November 22nd, 1911, Mr. Balboni gave me a young female Hen Harrier which had been shot the previous day. I subsequently saw one or two individuals in the brown plumage of immaturity, but was unable to obtain further specimens.

## CIRCUS ÆRUGINOSUS (Linn.).

*Circus æruginosus* Shelley, p. 181.

The Marsh Harrier was frequently seen during my visit in March, and Mr. Balboni has since forwarded several immature examples. Possibly it nests in the great tracts of bulrushes which fringe most of the Lakes. In November 1911 I saw a few Marsh Harriers near the Salt Lakes.

## CIRCUS MACROURUS.

*Circus pallidus* Sykes, Shelley, p. 183; Loat, Ibis, 1905, p. 458.

When travelling by train to the Wadi Natron in March 1910, I saw an adult male of this species, just before we sighted the Wadi. It was circling over the desert.

During my visit I saw one or more adult examples daily, and specimens were obtained.

## BUTEO FEROX FEROX (Gm.).

*Buteo ferox* Shelley, p. 201.

On March 21st, 1910, a single Long-legged Buzzard was seen. This species is easily distinguished from *B. buteo*

*desertorum* by its larger size, different coloration, and longer tail. Adult birds have paler heads and tails than younger birds.

AQUILA BONELLII Temm.

*Aquila bonellii* Shelley, p. 206.

I saw a Bonelli's Eagle on November 27th, 1911, flying over the cultivated land near the factory.

CIRCAËTUS GALLICUS (Gm.).

*Circaëtus gallicus* Shelley, p. 202.

On June 15th, 1911, Mr. Balboni sent me a fine living example of this Eagle which had been caught in the Wadi. He tells me that he found a nest of this species containing two young birds which he tried, without success, to keep alive.

AQUILA PENNATA (Gm.).

*Aquila pennatus* Shelley, p. 207.

On May 4th, 1910, I received in the flesh, a fine example of the Booted Eagle shot by Mr. Balboni on the previous day.

ACCIPITER NISUS.

*Accipiter nisus* Shelley, p. 185.

During the latter part of November 1911 I saw a single Sparrow-Hawk daily, but no examples were obtained. Mr. Balboni tells me that he has seen large numbers together during migration.

ACCIPITER BREVIPES Severtz.

Not mentioned by Shelley nor by any previous writers.

On April 30th, 1910, I received an immature example of this Sparrow-Hawk from Mr. Balboni, who had shot it on the previous day.

I now have two specimens of this species from Egypt, one from the Wadi Natron, and another from Giza, September 18th, 1908, but both are immature.

The Levant Sparrow-Hawk is easily distinguishable from *Accipiter nisus*, not only by the large drop-shaped marking on the under parts (in immature specimens), but by the comparatively short middle toe. In *A. nisus* two joints of

the middle toe project beyond the claw of the other two toes, whereas in *A. brevipes* only one joint does so.

MILVUS MIGRANS ÆGYPTIUS.

*Milvus ægyptius* Shelley, p. 196.

I have a specimen of a "Black Kite" shot in April 1910 by Mr. Balboni, and in November 1911 I saw another. For the present I refer them to the above-named race. Although the specimen in my collection has a jet-black bill, I have similar examples from Giza. The coloration of the bill seems to vary considerably, from jet-black to clear yellow, irrespective of age or season, though it should be noted that all seemingly *adult* birds with *black* bills which have so far passed through my hands are in worn or poor plumage, and are usually infested with feather-lice. It seems probable therefore that only really perfectly conditioned birds have the yellow bill, and that the young bird assumes the yellow bill at its first moult.

This Kite is only a straggler to the Wadi from the Nile Valley, as there are no trees tall enough to offer suitable places for nesting.

PERNIS APIVORUS (Linn.).

*Pernis apivorus* Shelley, p. 199.

On June 2nd, 1910, Mr. Balboni shot an adult male Honey-Buzzard, which he forwarded to me in the flesh.

The occurrence of this bird in such a place as the Wadi Natron is sufficiently remarkable in itself, but that it should occur in June is still more strange. It may be that it was a non-breeding bird, or possibly it had lost its way.

FALCO PEREGRINUS Linn.

*Falco peregrinus* Shelley, p. 186.

On several occasions during my visit in March, I saw large Falcons which I believe to have been of this species, as they probably were. On November 26th, 1911, while returning from the extreme north of the Wadi, Mr. Balboni and I rode up to within a short distance of a fine adult male Peregrine. It was clearly identified, but our collecting guns were too small to obtain it.

## FALCO SACER Schl.

*Falco sacer* Shelley, p. 190.

On November 26th, 1911, at Gaar, the northernmost lake in the Wadi, we saw a very large Sacer Falcon sitting on the expanse of natron which surrounds the lake. Repeated efforts were made to obtain this bird, but although it was "gorged" and only flew a short distance when put up, it was quite unapproachable.

## FALCO ÆSALON Linn.

*Falco æsalon* Shelley, p. 191; Loat, Ibis, 1905, p. 458.

On November 26th, 1911, I saw several Merlins at Gaar, and during the rest of my stay I met with a single example daily in the cultivated land, where it was doing great execution amongst the Skylarks.

## FALCO SUBBUTEO Linn.

*Falco subbuteo* Shelley, p. 192.

A single Hobby was seen on November 26th, 1911.

## FALCO VESPERTINUS Linn.

*Falco vespertinus* Shelley, p. 193.

Although I was too early in March 1910 to meet with this Falcon, I have since, through the kind help of Mr. Balboni, obtained a most interesting series of five skins from the Wadi, *i. e.* :—

1. ♂ adult, May 11th, 1910.
2. ♂ vix ad., May 11th, 1910. In this specimen the greater wing-coverts are those of the immature bird. The upper breast has a number of red feathers intermingled with the blue ones, and there is a large patch of red feathers on the nape.
3. ♂ juv., May 16th, 1910. In this specimen the upper parts are bluish with the exception of the nape, which is rust coloured. Under parts rusty white, with a few bluish feathers shewing on the breast; chin and throat blue. Thighs deep rusty red. Greater wing-coverts much worn.

4. ♀ adult, May 16th. Under parts washed with deep rust colour.
5. ♀ adult, May 22nd. Under parts whitish with a wash of pale rust colour; the nape almost white.

CERCHNEIS TINNUNCULUS.

I have two specimens of Kestrels from the Wadi Natron obtained by Mr. Balboni. One, a male shot on May 6th, 1910, is in nearly full plumage, the tail only shewing signs of immaturity. This example is quite distinct from the resident Kestrel of the Delta, *C. t. carlo* Hartert & Neumann, being larger and much paler both above and below. It belongs, I believe, to an undescribed race. An immature bird of similar size was shot by Mr. Balboni on August 24th, 1910, and is now in my possession.

I might add that I have a fully adult male example of this large pale race, which I shot near Aburoash in the Giza Province on December 23rd, 1910. This form is undoubtedly only a migrant to Lower Egypt, and its breeding quarters must be sought elsewhere.

CERCHNEIS CENCHRIS.

*Falco cenchris* (Cuv.), Shelley, p. 195.

On March 18th, 1910, I saw two female Lesser Kestrels in some eucalyptus trees in the Wadi and obtained both of them. Four days later a flock of twenty-five appeared, and of these—six examples—three males and three females were shot.

The Lesser Kestrel is *said* to be always distinguishable from *C. tinnunculus* by its white claws. I was surprised to find, however, that *none* of the eight examples referred to above had white claws!

The colour of the claws of the specimens obtained is as follows:—

- No. 1354, ♂ adult. 22.3.10. "Claws blackish grey."  
 No. 1353, ♂ adult. 22.3.10. "Claws of a darker brownish flesh colour."  
 No. 1355, ♂ adult. 22.3.10. "Claws brownish grey."  
 No. 1356, ♀. 18.3.10. "Claws slaty brown."



No. 1360, ♀. 18.3.10. "Claws brownish."

No. 1359, ♀. 22.3.10. "Claws of a brownish flesh colour."

No. 1358, ♀. 22.3.10. "Claws brown."

No. 1357, ♀. 22.3.10. "Claws black"!

The notes on the colour of the claws were written on the backs of the labels by myself at the time, and it is interesting to note that out of the eight examples—three of which are adult males in full plumage—none have white claws.

We have a living male Lesser Kestrel in the Giza Zoological Gardens caught locally in the spring of 1910, which has white claws, and has had them since the time we received it, and this is the only example of the Lesser Kestrel with white claws that I have so far examined in Egypt.

#### ARDEA CINEREA.

*Ardea cinerea* Shelley, p. 266.

Grey Herons were seen daily during my visit in March. As there are apparently no fishes in the Wadi Natron, I presume that the food of this and other species of Herons which visit the locality consists of toads (*Bufo viridis arabicus*), which abound there.

#### ARDEA PURPUREA Linn.

*Ardea purpurea* Shelley, p. 156.

I have received two adult Purple Herons shot by Mr. Balboni on April 20th and 21st, 1910.

#### ARDEA GARZETTA.

*Herodias garzetta* Shelley, p. 268.

Mr. Balboni shot a White Egret—an adult male—on April 29th, 1910.

#### ARDEA RALLOIDES.

*Ardeola comata* (Pall.), Shelley, p. 269.

I have three specimens of the Squacco Heron from the Wadi Natron collected by Mr. Balboni.

♂. April 16th, 1910.

○. May 7th, 1910.

♀. May 13th, 1910.

## BOTAURUS STELLARIS (Linn.).

*Botaurus stellaris* Shelley, p. 271.

Mr. Balboni sent me a female Bittern which he had shot on May 7th, 1910.

[It is somewhat surprising that neither Mr. Balboni nor I have met with *Ardetta minuta* in the Wadi. I fancy the reason for this is that owing to the non-existence of fishes there is not sufficient food for the bird, which is an abundant *resident* throughout the year in suitable spots in Lower Egypt.]

## NYCTICORAX GRISEUS (Linn.).

*Nycticorax griseus* Shelley, p. 270.

The Night Heron appears to be a visitor to the Wadi Natron in spring and autumn, as at both seasons I have received examples from Mr. Balboni. Whether it winters there as it does in Lower Egypt generally, I am unable at present to say.

## CICONIA CICONIA.

*Ciconia alba* Bechst., Shelley, p. 365.

On April the 18th, 1910, Mr. Balboni shot a White Stork and two days later another, both of which he forwarded to me.

## PLEGADIS FALCINELLUS (Linn.).

*Ibis falcinellus* Linn., Shelley, p. 362.

I have three specimens of the Glossy Ibis from the Wadi: two males shot by Mr. Balboni on April 11th, 1910, and a female shot on May 7th, 1910. On the latter date Mr. Balboni saw at least one hundred of these Ibises—and a wonderful sight it must have been.

Shelley says that this bird "ranges throughout Egypt and Nubia, where it remains during the year." This I believe is hardly correct, as I do not know of a single instance of the Glossy Ibis breeding in Egypt, although it is a regular spring visitor on migration.

## PHENICOPTERUS ROSEUS.

*Phenicopterus antiquorum* Shelley, p. 272; Loat, Ibis, 1905, p. 459.

During my visit in March I saw a huge flock of Flamingos on one of the Salt Lakes.

Up to the present time I have no records of this bird nesting in the Wadi, and, as all the lakes become dry during the summer, I believe, that the Flamingo is only a winter visitor.

## TADORNA CORNUTA.

*Tadorna vulpanser* Fleming, Shelley, p. 281.

Mr. Balboni shot a female Shelduck on the 23rd of December, 1910, which is now in my collection.

## MARMARONETTA ANGUSTIROSTRA.

Capt. Shelley does not include the Marbled Duck in his 'Birds of Egypt,' yet it appears to be not uncommon in the Wadi Natron, where it breeds. I have fine examples collected by Mr. Balboni during the breeding season, and he tells me that he has found the young. Certainly most of the specimens in my collection are breeding birds.

[I have a record of this duck in the Fayoum in February and have seen it in April in the Delta].

On 21st November, 1911, Mr. Balboni shot a duck in the Wadi which is now in my collection. In coloration it somewhat approaches the Marbled Duck, but it is much *whiter* and *much* smaller and, moreover, the bill is of a different shape to that of any duck with which I am acquainted.

## SPATULA CLYPEATA.

*Rhynchaspis clypeata* Shelley, p. 284; Loat, Ibis, 1905, p. 460.

The Shoveller is a common visitor during the autumn, winter, and spring to the Wadi, as elsewhere in Lower Egypt.

## QUERQUEDULA CRECCA (Linn.).

*Querquedula crecca* Shelley, p. 286; Loat, Ibis, 1905, p. 460.

A common winter visitor. I saw Teal in March, and after

my return Mr. Balboni sent me specimens. Although I have no record of this duck nesting either in the Wadi Natron or elsewhere in Egypt, it is quite possible that it may do so.

DAFILA ACUTA (Linn.).

*Dafila acuta* Shelley, p. 284; Loat, Ibis, 1905, p. 460.

Like the Shoveller and Teal, the Pintail is not uncommon during the winter months in the Wadi Natron. I have received several specimens from Mr. Balboni.

[MARECA PENELOPE (Linn.).

*Mareca penelope* Shelley, p. 288; Loat, Ibis, 1905, p. 460.

I believe I saw a Wigeon during my visit in March 1910.]

FULIGULA FERINA (Linn.).

*Fuligula ferina* (Linn.), Shelley, p. 289.

On 19th March I saw a female Pochard on one of the Salt Lakes.

FULIGULA RUFINA.

On 20th January 1911, Mr. Balboni shot a fine adult male of this handsome Pochard, which is now in my collection. Although Shelley did not meet with the Red-crested Pochard in Egypt it seems to be by no means uncommon in Lower Egypt during the winter months, and I now possess several specimens from the Delta.

FULIGULA CRISTATA (Linn.).

*Fuligula cristata* Shelley, p. 290.

On 21st March, 1910, I saw a Tufted Duck in the Wadi, on one of the Salt Lakes.

FULIGULA NYROCA.

*Nyroca leucophthalma* Bechst., Shelley, p. 288; Loat, Ibis, 1905, p. 460.

On 21st November, 1911, Mr. Balboni shot a White-eyed Duck, which is now in my collection.

## ANAS PLATYRHYNCHA.

(*Anas boschas* vel *boschas* auctorum.)

*Anas boschas* Linn., Shelley, p. 283 ; Loat, Ibis, 1905, p. 460.

Mr. Balboni has met with the Mallard in the Wadi, but up to the present I have no specimens from there.

## COLUMBA ŒNAS Linn.

*Columba œnas* Shelley, p. 213.

Although no late writers have given positive proof of the occurrence of the Stock Dove in Egypt, and even von Heuglin doubted its occurrence in that country (Orn. N.O.-Afr. p. 828), there is not the slightest doubt that it is a regular visitor in great numbers during the winter months.

Every winter during the past four years I have seen large flocks of Stock Doves in the Delta and near Cairo.

On 19th March, 1910, I saw one at close quarters in the Wadi, and should have probably obtained it but for the zeal of a brother "sportsman," who, getting ahead of me, put it up and missed it! However, during my visit in November I obtained two beautiful specimens—one shot by Mr. Balboni on the 24th, and another three days later.

A party of about four individuals frequented the cultivated land throughout my stay, but only these two examples were obtained.

## TURTUR TURTUR ARENICOLA Hartert.

*Turtur turtur arenicola* Hartert, Nov. Zool. vol. i. p. 42 (1894).

This pale form of the Turtle-Dove is a regular visitor to Egypt on both spring and autumn migrations.

I have an adult male shot by Mr. Balboni on April 28th, 1910, in the Wadi Natron.

Shelley ('Birds of Egypt,' p. 214) states that the Turtle-Dove (*T. auritus*) frequently breeds in Egypt. Up to the present I have no other records of this fact, but if a Turtle-Dove does so it would be interesting to know whether the Egyptian

breeding bird is the typical *Turtur turtur* of Europe, or the present form. This form is a common visitor to Egypt during both migrations, but I have no records of it from the Wadi.

*PTEROCLES CORONATUS* Licht.

*Pterocles coronatus* Shelley, p. 220.

There are several living examples of the Crowned Sand-grouse in the Giza Zoological Gardens which were captured in the Wadi Natron by a Bedouin.

During my visit in March 1910 I frequently heard that Sand-grouse were to be seen, but I did not meet with any.

[*CACCABIS CHUKAR* subsp. ?

Mr. Balboni tells me that he has seen large Red-legged Partridges on several occasions in the Wadi, but up to the present time I have no specimens of this bird.]

*COTURNIX COTURNIX*.

*Coturnix communis* Bonn., Shelley, p. 223; Loat, Ibis, 1905, p. 458.

During my stay in March 1910 Quails were very numerous, and I obtained some specimens, all of which belong to this form. I now much regret that I did not pay more attention to these birds, as I have since found that *C. c. capensis* occurs in Egypt, and I have specimens of this form from Giza.

A few Quails nest in Lower Egypt but I have no breeding examples, so I cannot say to which form such birds belong.

A series of adult males from Egypt now before me vary considerably in the colour, shape, and size of the "anchor" mark on the throat. In some this mark is very well defined and black, while in one specimen it is reduced to two small patches of chestnut on the sides of the neck!

*RALLUS AQUATICUS* Linn.

*Rallus aquaticus* Shelley, p. 273; Loat, Ibis, 1905, p. 460.

The Water-Rail is a most abundant resident in the Wadi

Natron, and thanks to Mr. Balboni's kind help I have a good series of birds from quite young fledglings to adults, as well as many eggs.

Several adults (in autumn) in my collection have moulted all their primaries at once, and are in a flightless condition. Shelley says that this species is only a winter visitant to Egypt, but there is no doubt that it is a common resident in suitable localities. My friend Major R. Sparrow has eggs from Mehas, so that it certainly breeds in the Delta as well as in the Wadi Natron. During my visit in November 1911 I was greatly interested to find how noisy these birds were (I was previously under the impression that the curious squealing grunting call of the Water-Rail was only uttered in the breeding season), but every morning I heard numbers calling at daybreak. The natives of the Wadi call the Water-Rail "Kelb el tūr," which means "the dog bird." Evidently this name is given owing to its loud voice.

*PORZANA MARUETTA* Leach.

*Porzana maruetta* Shelley, p. 274.

I have a Spotted Crake shot by Mr. Balboni on the 29th of October, 1910, in the Wadi Natron.

*GALLINULA CHLOROPUS* (Linn.).

*Gallinula chloropus* Shelley, p. 275.

The Moorhen is an abundant resident in the Wadi Natron, and I have a good series of birds of all ages collected by Mr. Balboni.

Some Egyptian examples of this species are much smaller than British specimens, but they vary much in size, and at present I cannot separate the Egyptian breeding bird, although their eggs seem very small. One of my specimens has a small amount of buff on the under tail-coverts.

[*EUPODOTIS ARABS* ?

I have frequently heard of Large Bustards being seen on the Wadi, but up to the present have not obtained an example. I presume them to be of this species.]

## ÆDICNEMUS ÆDICNEMUS.

*Ædicnemus crepitans* Shelley, p. 230.

I have an adult female Saharan Stone-Curlew, shot on May 21st, 1910, by Mr. Balboni, who also sent me two eggs of the bird. This form differs from the typical Stone-Curlew in being paler and more sandy coloured on the upper parts.

## ÆDICNEMUS SENEGALENSIS.

*Ædicnemus senegalensis* Nicoll, Ibis 1909, p. 642.

Until I found the Senegal Stone-Curlew to be a common resident near Cairo—in fact *the* common Stone-Curlew of Lower Egypt, it had not previously been recorded from anywhere north of Luxor.

During my visit to the Wadi Natron in March 1910 I saw a pair of these birds at close quarters, and in May of that year Mr. Balboni gave me two eggs of this species which he had taken in the Wadi.

The eggs of the Senegal Stone-Curlew are easily distinguishable from those of *Æ. a. saharae* by the bold black blotches, and shew none of the fine waved lines which are characteristic of the Saharan and typical *Ædicnemi*.

## GLAREOLA PRATINCOLA Linn., and

GLAREOLA PRATINCOLA MELANOPTERA auctorum.

*Glareola pratincola* Linn., Shelley, p. 227.

*Glareola nordmanni* Fischer, Shelley, p. 229.

*Glareola pratincola* Linn., Nicoll, Ibis, 1909, p. 643.

Although my previous remarks on the two so-called forms of Pratincole have been received with much friendly criticism, I still adhere to the opinion that the Common and Black-winged forms are not separable, but are merely varieties of the same race. I now have a fair series of Egyptian specimens of Pratincoles, and find that not one of the so-called differences is constant. *G. p. melanoptera* is said to have the under wing-coverts and axillaries entirely black and the secondaries *not tipped* with white. I certainly have such specimens, but I also have some with red under wing-coverts and axillaries, but no white on the secondaries!



Moreover I have specimens with intermingled red and black under wing-coverts. There is also a decided difference in the colour of the under parts of individuals irrespective of sex!

Such being the case I unite the two so-called forms under one heading, and at present recognise but one species, *i. e.* *Glareola pratincola* Linn., as occurring in Egypt.

I have two specimens from the Wadi Natron: a male shot on April 19th, 1910, and another male shot on the following day, both sent to me by Mr. Balboni. The latter has very red under wing-coverts and well-defined white tips to the secondaries, as well as being deeply coloured on the breast. The former is pale below, has no white tips to the secondaries, and has the under wing-coverts dull red and black.

#### CURSORIUS GALLICUS Gmel.

*Cursorius gallicus* Shelley, p. 229; Loat, Ibis, 1905, p. 458.

Fairly common and resident in the Wadi. During my visit I saw several pairs, which were so wild that they were quite unapproachable.

On July 20th, 1910, Mr. Balboni shot an adult male together with a young female. The latter is pale sandy buff above with small black spots on the feathers of the mantle and wing-coverts. The scapulars are marked with irregular V-shaped markings.

#### CHARADRIUS PLUVIALIS Linn.

*Charadrius pluvialis* Shelley, p. 235.

On November 26th, 1911, I saw several Golden Plovers at Gaar, in the Wadi Natron, and one example was obtained.

#### ÆGIALITIS PECUARIA (Temm.).

*Ægialitis pecuarius* Shelley, p. 239.

Although Kittlitz's Plover is a common resident in the Delta and Fayoum, I only have one record from the Wadi Natron, *i. e.*, a pair—one of which I obtained on March 20th, 1910. I specially looked out for this Plover during my visit, and the only two seen were met with late one evening on the

edge of a salt lake, when a long shot secured a fine adult male in nearly full breeding plumage.

*ÆGIALITIS ALEXANDRINA.*

*Ægialitis cantianus* (Lath.), Shelley, p. 210; Loat, Ibis, 1905, p. 458.

The Kentish Plover is a most abundant resident in the Wadi Natron, as it is elsewhere in suitable localities in Lower Egypt. At the time of my visit in March a few pairs had commenced to breed. In November 1911 I saw large flocks of Kentish Plovers. I believe that the "incubation patch" of this Plover has not previously been described. I have examined several breeding females, and in each case find that the "patch" is not universal on the abdomen as in Passerine birds, but that there is a patch for each egg! In the present species there are a pair of patches on the lower breast and a third on the abdomen, the number of incubation patches corresponding with the number of eggs laid.

*ÆGIALITIS HIATICOLA.*

*Ægialitis intermedius* (Ménétr.), Shelley, p. 242.

*Ægialitis hiaticola intermedia* Nicoll, Ibis, 1909, p. 641.

During my visit in March 1910 I saw a few Ringed Plovers, but have no specimens from the Wadi.

Examples of this Plover from Lower Egypt seem smaller and darker than British specimens, but, as I at present have no perfectly adult specimens, I am not sure as to whether they are really separable.

In my former paper I followed Shelley in using the name *intermedia* of Ménétries for this species.

*ÆGIALITIS MINOR.*

*Ægialitis minor* Shelley, p. 242.

The Little Ringed Plover was extremely common during my visit in March, and several perfectly adult specimens were obtained. From the behaviour of some of the birds I have little doubt that they were about to nest.

The call-note of this species is totally different to that of the Common Ringed Plover.

## VANELLUS VANELLUS.

*Vanellus cristatus* Shelley, p. 231; Loat, Ibis, 1905, p. 558.

On December 20th, 1910, Mr. Balboni shot a Lapwing, which is now in my collection. I saw many examples during my visit in November 1911.

## HOPLOPTERUS SPINOSUS.

*Hoplopterus spinosus* Shelley, p. 232; Loat, Ibis, 1905, p. 458.

Mr. Balboni has sent me several examples of the Spur-winged Plover, shot during May and August 1910. I do not know whether this species nests in the Wadi Natron. I did not see it in March, and it may be only a straggler there. In November 1911 I saw several examples, one of which was obtained.

## RECURVIROSTRA AVOCETTA Linn.

*Recurvirostra avocetta* Shelley, p. 260; Loat, Ibis, 1905, p. 459.

I have a pair of Avocets obtained through Mr. Balboni: a male shot April 17th, 1910, and a female on May 8th, 1910. Mr. Balboni is of the opinion that this species breeds in the Wadi Natron.

## HIMANTOPUS CANDIDUS Bonn.

*Himantopus candidus* Shelley, p. 260.

I have received four examples of the Black-winged Stilt from Mr. Balboni, shot in April, May 16th and 17th, and August 25th, 1910. I did not see this species during my stay in March or in November.

## HÆMATOPUS OSTRALEGUS Linn.

*Hæmatopus ostralegus* Shelley, p. 243.

On August 15th, 1910, Mr. Balboni shot an adult Oystercatcher in the Wadi Natron. This example is now in my collection, and is one of the most interesting birds I have yet received from the locality. What can have induced this bird to leave the shore, where shellfish are abundant, and proceed to such a place as the Wadi Natron, where suitable

food is almost absent, is difficult to say. Unfortunately I was away when the bird was forwarded, so I cannot say in what condition the body was at the time that it was shot. Just before I visited the Wadi in November 1911, Mr. Balboni met with a small flock of Oystercatchers at the southern end of the Wadi, but was unable to shoot any.

GALLINAGO CÆLESTIS.

*Gallinago media* Leach, Shelley, p. 249 ; Loat, Ibis, 1905, p. 459.

This Snipe is a common visitor during the spring and autumn. In March 1910 I saw many at the fresh-water springs near the Salt Lakes, and examples were obtained. Mr. Balboni has since sent me further specimens. Again, in November 1911 I saw a number of Snipe. Up to the present time I have no records of this species breeding in the Wadi, but as I believe it does so in the Delta, it *may* be a resident in the Wadi Natron.

GALLINAGO GALLINULA.

*Gallinago gallinula* Shelley, p. 249 ; Loat, Ibis, 1905, p. 459.

During March 1910 I saw a few Jack Snipe in the Wadi Natron, and in November 1911 several were again seen.

RHYNCHÆA CAPENSIS.

*Rhynchæa capensis* Shelley, p. 250.

I have received specimens of the Painted Snipe from Mr. Balboni, shot in spring and autumn, but have no records of the species during the breeding-season. There is no doubt that it breeds in the Delta, however, and it may do so in the Wadi Natron.

TRINGA ALPINA.

*Tringa cinclus* Shelley, p. 253.

During my visit in March 1910 I saw a few Dunlins, and on October 23rd, 1910, Mr. Balboni shot one, which he forwarded to me. Unfortunately, the specimen was too much decomposed for preservation. In November 1911 I saw two Dunlins near the factory.

## TRINGA MINUTA.

*Tringa minuta* Shelley, p. 251; Loat, Ibis, 1905, p. 459.

The Little Stint is a most abundant spring and autumn visitor to the Wadi Natron. In fact, it is, I should say, the commonest wader during the spring migration, with the exception of the Ruff, which occurs there in vast numbers.

I have some beautiful specimens of Little Stints in full breeding-plumage, shot in May by Mr. Balboni.

One female example—shot on May 10th, 1910, which is before me as I write—shews transition in some of the feathers from winter to summer plumage by colour-change, black patches appearing in the centre of the worn grey feathers.

The change of colour of feathers, otherwise than by "abrasion," is nowadays looked upon as a "fable" by many ornithologists. Yet that such a change does take place is an undoubted fact, and those who like the writer have studied living waders, etc. in captivity, have noted the gradual change of individual feathers.

In November 1911, I met with great numbers of Little Stints on the shores of the lakes, and several specimens were obtained.

## TRINGA TEMMINCKI.

*Tringa temminckii* Shelley, p. 252.

During March 1910 I found Temminck's Stint to be abundant in the Wadi Natron, although in far smaller numbers than the Little Stint. Moreover, the former was seldom met with on the edge of the lakes—preferring the smaller fresh-water pools. All those obtained were in full winter plumage.

## TRINGA SUBARQUATA.

*Tringa subarquata* Shelley, p. 253.

During April and May 1910 Curlew Sandpipers must have been abundant in the Wadi, for I received many examples from Mr. Balboni. Unfortunately, owing to the hot weather, a number of these arrived in too bad a state for

preservation, but I have five perfect examples from the Wadi now before me. An adult male, shot on May 17th, is one of the finest summer-plumaged Curlew Sandpipers that I have ever seen. Nearly the whole of the contour feathers are of a deep rust-red, those of the upper parts being marked with deep black. The other four are females in varying stages towards summer plumage, but all of them shew distinct signs of colour-change in the worn winter feathers of the upper parts. One shot on May 5th shews this change particularly well, for nearly all the feathers of the mantle, although much worn at the tips, are black with rufous markings and a grey border. Had these feathers been newly *moulted* they could not have shown such signs of wear at so early a date. The feathers of the under parts have apparently been acquired by moult.

*TOTANUS STAGNATILIS.*

*Totanus stagnatilis* Shelley, p. 257 ; Loat, *Ibis*, 1905, p. 459.

During April 1910 Mr. Balboni sent me several fine examples of the Marsh Sandpiper.

A fine pair of adults in full summer plumage, shot on April 12th, 1910, are before me as I write. Of these two birds the female is more heavily marked with black above than is the male, and the black spots on the breast are larger and more numerous.

*TOTANUS CALIDRIS.*

*Totanus calidris* Shelley, p. 255 ; Loat, *Ibis*, 1905, p. 459.

A spring and autumn visitor to the Wadi Natron, where it also winters. On March 23rd, 1910, I shot a Redshank in nearly full summer plumage. So fat was it that the skin of the breast split when it fell.

I have received specimens from Mr. Balboni shot in August 1910. In November 1911 I found large flocks of Redshanks on the shores of all the Salt Lakes, and I frequently observed large parties flying over the desert from north to south.

## MACHETES PUGNAX (Linn.).

*Machetes pugnax* Shelley, p. 246.

The magnitude of the spring migration of Ruffs in Lower Egypt must be seen to be believed. My visit to the Wadi Natron in March 1910 coincided with the northward movement of this species, and I must have seen many thousands of Ruffs in a few days. On March 24th a very strong migration of birds took place, and on the evening of that day and throughout the following day the shores of one of the Salt Lakes was literally black with Ruffs and Reeves—flock after flock, some numbering hundreds, were seen arriving and settling on the already crowded shore. Nearly all of them were still in winter plumage or only just beginning to moult, though I saw one with a partial “ruff.” During my stay I saw several examples with a pure white neck and no ruff, and one of these was shot and given to me by Mr. Balboni.

## TOTANUS HYPOLEUCUS.

*Actitis hypoleucos* Shelley, p. 259.

Several Common Sandpipers were seen during my visit in March, but no examples were obtained.

## TOTANUS OCHROPUS (Linn.).

*Totanus ochropus* Shelley, p. 258.

The Green Sandpiper was frequently met with in March 1910, nearly always in the fresh-water or brackish pools, and examples were obtained. In November 1911 I met with fair numbers in similar situations.

## TOTANUS GLAREOLA (Linn.).

*Totanus glareola* Shelley, p. 259; Loat, Ibis, 1905, p. 459.

The Wood Sandpiper was fairly numerous during March 1910. Most of those seen frequented the fresh-water springs near the Salt Lakes.

I have an adult female got by Mr. Balboni on April 18th, 1910, and an immature bird on August 25th, 1910.

This species passes through Lower Egypt in large numbers during the spring migration, so that its occurrence in the Wadi Natron is not unexpected.

TOTANUS FUSCUS Leisler.

*Totanus fuscus* Shelley, p. 255.

On 13th May, 1910, Mr. Balboni shot three female Dusky Redshanks, which he forwarded to me.

This is the only record I have of the species in spring from the Wadi Natron. On November 9th, 1910, Mr. Balboni obtained a female in winter plumage, which is now in my collection.

TOTANUS CANESCENS.

*Totanus canescens*, Shelley, p. 256.

I saw Greenshanks in the Wadi Natron during my stay in March 1910.

LIMOSA BELGICA.

*Limosa aygcephala* Shelley, p. 245; Loat, Ibis, 1905, p. 458.

I have a male Black-tailed Godwit shot by Mr. Balboni on April 20th, 1910.

This specimen had just begun to assume its summer plumage by a four-change. Worn *winter* feathers of the upper parts are shewing black centres margined with rufous; the feathers of the under parts, *i. e.* breast and throat, are pale rufous with a subterminal blackish bar and have worn white tips. Some of the worn winter feathers of the upper parts have only a narrow black line down the centre, while others have a trifurcate black patch on the centre.

NUMENIUS ARQUATA.

*Numenius arquata* Shelley, p. 243; Loat, Ibis, 1905, p. 458.

I have a Curlew shot on January 11th, 1911, by Mr. Balboni.

During my visit in March 1910 I saw several Curlews but found them to be absolutely unapproachable, and the same was the case with a few seen in November 1911.



## HYDROCHELIDON NIGRA.

*Hydrochelidon fissipes* Shelley, p. 300.

On 21th August Mr. Balboni shot an immature Black Tern, which he forwarded to me.

## HYDROCHELIDON LEUCOPTERA.

*Hydrochelidon nigra* Shelley, p. 301.

A host of birds must have visited the Wadi Natron on the 10th of May, 1910, for on that day Mr. Balboni shot and sent to me no less than ten adult White-winged Black Terns as well as five Reeves, one Marsh Sandpiper, four Little Stints, one Bee-eater, two Spanish Sparrows, and two Golden Orioles.

Females of the present species differ from the males in having less white on the shoulders and grey tails, and in being less sooty black below; whereas adult males have pure white rectrices and are jet-black on the under parts.

## LARUS RIDIBUNDUS Linn.

Mr. Balboni sent me a Black-headed Gull which he shot on December 23rd, 1910.

I believe this species to be only a winter visitor to Egypt, and not a resident as Capt. Shelley says it is. In November 1911 I saw a single example on one of the Salt Lakes near Bir Hodmer.

## PODICEPS FLUVIATILIS.

*Podiceps minor* Shelley, p. 314; Loat, Ibis, 1905, p. 560.

This little Grebe is probably a resident in the Wadi Natron, where it breeds. I have three specimens collected by Mr. Balboni: one, a female assuming breeding plumage, shot on February 15th, 1911; one adult female in full breeding plumage, shot on June 3rd, 1911; and an immature male on June 5th, 1910. In November 1911 I saw a large number on the lake at Gaar.